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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,182	04/22/2004	Andrea F. Gulla	426.008A	7722

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HEDMAN & COSTIGAN P.C.  
1185 AVENUE OF THE AMERICAS  
NEW YORK, NY 10036

EXAMINER
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HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/830,182

Applicant(s)

GULLA ET AL.

Examiner

Patricia L. Hailey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5-22 and 36-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8, 11, 14-19, 45, 47, and 48 is/are rejected.
- 7) ☒ Claim(s) 9, 10, 12, 13, 20-22, 36-44, and 46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Applicants' remarks and amendments, filed on September 20, 2005, have been carefully considered. Claims 4 and 23-35 have been canceled; claims 46-48 have been added (in amendments filed on June 17 and 29, 2005).

Claims 1-3, 5-22, and 36-48 are now pending in this application.

### ***Withdrawn Rejections***

The 112(1) rejection of claims 4, 7, 9, 10, 12, and 13 for failing to comply with the enablement requirement stated in the previous Office Action has been withdrawn in view of Applicants' cancellation of claim 4 and of Applicants' amendments to claims 7, and 9. The 112(2) rejection of claims 3-22 stated in the previous Office Action has been withdrawn in view of the cancellation of claim 4 and of the amendments to claims 3, 5, 7, 9, and 11.

### ***New Ground(s) of Rejection***

The following New Ground(s) of rejection are being made in view of Applicants' amendments, and in view of the Examiner's reconsideration of the pending claims.

### ***Claim Rejections - 35 USC § 112***

1. ***Claims 7, 19, and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.***

Claims 7 and 19 are indefinite because the phrase "ternary sulfide of ruthenium and a transition metal M" is unclear. A "ternary sulfide" contains **three** metals and sulfur, yet claims 7 and 19 only recite **two** metals.

Claim 19 is indefinite for lacking antecedent basis for the phrase " molar ratio of said nitrogen sulfide". Claim 11, from which claim 19 depends, does not recite "nitrogen sulfide".

Claim 45 is indefinite because the phrase "process of hydrochloric acid electrolysis cell" is unclear. It appears that the claim should read "process of producing a hydrochloric acid electrolysis cell".

Additionally, claim 45 is indefinite for lacking antecedent basis for the phrase "gas diffusion cathode of claim 20". Claim 20 is directed to a "gas diffusion **electrode**" (emphasis added).

### *Maintained Rejections*

#### *Claim Objections*

2. *Claim 45 remains objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.*

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*Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.*

Claim 45 continues to fail to further limit the subject matter of claim 20, from which claim 45 depends. Claim 45 recites the limitation "assembling the gas diffusion cathode of claim 20"; claim 20 is directed to a "gas diffusion **electrode**" (emphasis added).

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 102/35 USC § 103***

4. *Claims 1, 5, 7, 8, 11, 14-19, 47, and 48 are now rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Breysse et al. (U. S. Patent No. 5,248,648).*

Breysse et al. teach a hydrorefining catalyst comprising ruthenium sulfide and cobalt and/or nickel sulfide on a refractory oxide support. See the Abstract of Breysse et al., as well as col. 2, lines 16-28 (considered to read upon **claims 1, 7, and 8**).

The catalysts are prepared by successive impregnations of the refractory oxide with solutions of metal salts. The impregnations may be performed in any order, although the ruthenium salt (e.g., ruthenium trichloride or hexaaminoruthenium) is preferably impregnated first. Once the impregnations are completed, the catalyst is

sulfided with a gas mixture containing hydrogen sulfide, i.e., generally a mixture of hydrogen sulfide with either hydrogen or nitrogen. See col. 2, lines 39-58 of Breysse et al, as well as Example 1, which depicts an embodiment of preparing Patentees' catalyst, which includes drying the catalyst at 110°C, as well as treatment with a mixture of hydrogen sulfide and nitrogen (containing 15% hydrogen sulfide) at a temperature of 600°C for 4 hours (considered to read upon **claims 5, 11, 15-19 47, and 48**).

It is noted that claims 5, 11, 14-19, 47, and 48 are product-by-process claims (i.e., "obtained by incipient wetness impregnation..."). Although Breysse et al. disclose a preparation process similar to that respectively claimed, it has been held that: "[A]ny difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show that the same is a process of making." In re Brown, 173 U.S.P.Q. 685 and In re Fessmann, 180 U.S.P.Q. 324.

The claim limitation "chemically stable in a hydrochloric environment in the presence of dissolved chlorine and optionally of dissolved oxygen" is considered a property inherently exhibited by Breysse et al.

In view of these teachings, Breysse et al. anticipate claims 1, 5, 7, 8, 11, 14-19, 47, and 48.

In the alternative:

Breyse et al. disclose that Patentees' catalyst is for hydrofining petroleum and petroleum fractions (col. 1, lines 9-22), as opposed to 'for oxygen reduction', as instantly claimed (e.g., claims 1 and 23). However, Applicants' claim limitation "for oxygen reduction" is considered a statement of intended use. Since the claimed invention is directed to a composition and a method for its preparation, a statement of intended use of said composition does not affect the patentability of the claimed composition. In re Thuaud, 57 U.S.P.Q. 324 (CCPA 1943); In re Schoenwald, 22 U.S.P.Q. 2d 1671 (FC 1992).

Moreover, a new use for an old composition does not render it patentable. It is contrary to spirit and letter of patent laws that patents be granted for old composition of matter based on new uses of composition where uses consist merely in employment of compositions; Patentee is entitled to every use of which invention is susceptible, whether such use be known or unknown. In re Thuaud, 57 U.S.P.Q. 324 (CCPA 1943).

5. *Claims 1, 5, 7, 8, 11, 16-18, 47, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raybaud et al. (U. S. Patent No. 6,149,799).*

Raybaud et al. teach a catalyst for hydrofining and hydroconverting hydrocarbon feeds, said catalyst comprising a mixed sulphide comprising at least two elements selected from those having the following atomic numbers: 3, 11, 12, 19-33, 37-51, 55-83, and 87-103. See the Abstract of Raybaud et al., as well as col. 1, line 63 to col. 2, line 7, and col. 9, lines 14-35 (considered to read upon **claims 1, 7, and 8**).

The reference also discloses exemplary mixed sulphides reading upon Applicants' claims 1 and 7. See col. 6, line 64 to col. 8, line 27 of Raybaud et al.

Patentees' catalyst can be prepared by "any method which is known to the skilled person" (col. 10, line 1-67; considered to read upon **claims 5 and 11**). Such methods include impregnating a matrix with a solution of the constituent elements of the active phase, followed by drying at temperatures ranging from about 60°C to 250°C. Constituents include oxysulfides, halides, nitrates, etc. (col. 10, lines 47-67).

The catalyst of Raybaud et al. is not disclosed as suitable for use in oxygen reduction, as recited in Applicants' claims. However, Applicants' claim limitation "for oxygen reduction" is considered a statement of intended use. Since the claimed invention is directed to a composition and a method for its preparation, a statement of intended use of said composition does not affect the patentability of the claimed composition. In re Thuau, 57 U.S.P.Q. 324 (CCPA 1943); In re Schoenwald, 22 U.S.P.Q. 2d 1671 (FC 1992).

Moreover, a new use for an old composition does not render it patentable. It is contrary to spirit and letter of patent laws that patents be granted for old composition of matter based on new uses of composition where uses consist merely in employment of compositions; Patentee is entitled to every use of which invention is susceptible, whether such use be known or unknown. In re Thuau, 57 U.S.P.Q. 324 (CCPA 1943).

Given the strong similarities between the teachings of Raybaud et al. and Applicants' claims in their present form, it would have been obvious to one skilled in



the art to reasonably expect that the catalyst of Raybaud et al. would function in oxygen reduction, absent the showing of convincing evidence to the contrary. Additionally, because Raybaud et al. teach a catalyst comparable to that respectively claimed, one of ordinary skill in the art would reasonably expect the catalyst of Raybaud et al. to exhibit Applicants' claim limitation "chemically stable in a hydrochloric environment in the presence of dissolved chlorine and optionally of dissolved oxygen."

6. *Claims 1-3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dubeck et al. (U. S. Patent No. 4,430,253).*

Dubeck et al. teach a sulfide-modified ruthenium catalyst deposited on, for example, carbon. See col. 5, lines 26-32 of Dubeck et al.

The catalyst may be prepared by dissolving a soluble ruthenium compound in a suitable solvent and impregnating the support therewith. The impregnated support is then dried and reduced with hydrogen at elevated temperatures. Preferably, the ruthenium is in the form of ruthenium chloride. See col. 6, lines 54 to col. 7, line 2 of Dubeck et al.

Additionally, the catalyst may be prepared by dissolving a soluble ruthenium compound in a solvent, adding it to a catalyst support, and adding thereto a sulfide-containing solution. The solvent is vaporized from the catalyst mixture, and the final product is contacted with hydrogen. Sulfide may be introduced by materials such as hydrogen sulfide. See col. 7, line 53 to col. 8, line 20 of Dubeck et al.

Although the catalyst of Dubeck et al. is not disclosed as being "for oxygen reduction" or "chemically stable in a hydrochloric environment in the presence of dissolved chlorine and optionally of dissolved oxygen", one of ordinary skill in the art would reasonably expect that, because Dubeck et al. teach a catalyst comparable to that respectively claimed, as well as a comparable method for preparing said catalyst, these limitations would be embraced by Patentees' catalyst, absent the showing of convincing evidence to the contrary.

#### *Response to Arguments*

In response to Applicants' arguments that Breysse et al. do not anticipate or suggest the claimed invention, it is the Examiner's position that this reference reads upon Applicants' claims in their present form. While Applicants argue that the claimed invention is "directed to an electrocatalyst for the reduction of oxygen", the Examiner respectfully points out that the claims recite "a catalyst for oxygen reduction". The intended use of Applicants' claimed catalyst is not given patentable weight. Additionally, the instant claims do not recite features/limitations such as "electrically conductive", "conductive carbon", etc.

The fact that Breysse et al. disclose a hydrotreating chemical process does not preclude the catalyst disclosed therein from reading upon the instant claims.

Applicants state that the claims in their present form reflect the limitation "only

conductive carbons"; Applicants' instant claim 1 recites the limitation "conductive support", which is not considered to exclusively mean "conductive carbons". Although refractory oxides are "a different class of materials from carbons", they are considered to read upon the limitation "conductive support".

In response to Applicants' arguments that Raybaud et al. do not teach or suggest Applicants' claimed catalyst, it is the Examiner's position that the reference's teaching of "impregnating a matrix with a solution of the constituent elements" is considered to read upon "supporting". Further, although this reference discloses the employment of the catalyst in a hydrorefining chemical process, the reference is relied upon for its teaching with respect to the catalyst, and the relevance of the catalyst to Applicants' instantly claimed catalyst.

In response to Applicants' arguments that Dubeck et al. disclose a catalyst most comparable to that instantly claimed, but "is not an electrocatalyst", it is the Examiner's position that Applicants' claims are merely directed to a catalyst, not an electrocatalyst. Applicants also argue that while Dubeck et al. disclose the employment of carbon as a support, the carbon is not defined as a "conductive carbon". Applicants have not shown any convincing evidence supporting this argument.

Applicants' arguments traversing the rejections of record are based on features not recited in the instant claims and in what processes the prior art catalysts are

employed, but not on the catalysts themselves. Applicants' claims are merely directed to a catalyst, not an electrocatalyst, as Applicants argue.

For these reasons, Applicants' arguments are not persuasive.

*Allowable Subject Matter*

7. Claims 9, 10, 12, 13, 20-22, 36-44, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and

any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

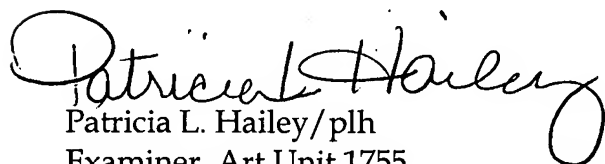
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

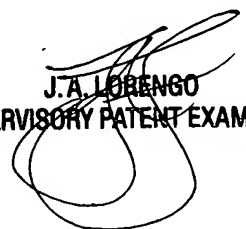
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
November 30, 2005



J.A. LOBENGO  
SUPERVISORY PATENT EXAMINER